U.S. Department
of Transportation

**Research and
Special Programs
Administration**

SEP 21 2000

400 Seventh Street, S.W.
Washington, D.C. 20590

DOT-E 6765
(THIRTEENTH REVISION)

EXPIRATION DATE: **February 28, 2002**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Air Products and Chemicals, Inc.
Allentown, PA

(See Appendix A to this document for a list of additional grantees).

2. PURPOSE AND LIMITATIONS:

a. This exemption authorizes the use of insulated non-DOT specification portable tanks containing Divisions 2.1 and 2.2 cryogenic liquid for transportation in commerce. This exemption provides no relief from any Hazardous Materials Regulation (HMR) other than as specifically stated herein.

b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.

3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 172.203, 173.318, 173.320, 176.76(h), 176.30, 177.840, 178.338.

5. BASIS: This exemption is based on the application of Air Products and Chemicals, Inc. dated May 3, 2000, submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Materials Description	Hazard Class/ Division	Identification Number	Packing Group
Helium, refrigerated liquid *(cryogenic liquid)*	2.2	UN 1963	N/A
Hydrogen, refrigerated liquid *(cryogenic liquid)*	2.1	UN 1966	N/A

7. SAFETY CONTROL MEASURES: Packaging prescribed is an insulated, non-DOT specification portable tank designed and constructed in conformance with Section VIII of the ASME Code, and subparagraph a. or b. of this paragraph. The portable tank is skid-mounted or enclosed in an ISO type frame. The portable tank is vacuum-insulated with a supplemental liquid nitrogen shield. Design pressure is 64 or 91 PSIG for the internal tank, and 6 PSIG for the liquid nitrogen tank. Design temperature is -452°F for the inner tank and any part, valve or fitting that may come in contact with the lading; and -320°F for the liquid nitrogen tank and any part, valve or fitting that may come in contact with liquid nitrogen. Nominal water capacity is 11,000 (U.S.) gallons for the inner tank and 385 (U.S.) gallons for the nitrogen tank. Material for the inner tank and the nitrogen tank is SA-240 Type 304 stainless steel; material for the outer jacket is SA 36 or ASTM A 283 or equivalent steel.

a. Each portable tank must conform to Gardner Cryogenics Corporation's drawing 7453 (internal tank design pressure is 64 PSIG) and design calculation 5750, or drawing 8075A (internal tank design pressure is 91 PSIG) and design calculation 2450 on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA). No new construction is authorized unless the design conforms with subparagraph 7.b. of this exemption.

b. New construction after December 31, 1992, must conform with § 178.338 except as follows. Corresponding drawings and calculations must be submitted to the OHMEA prior to first shipment.

(1) Impact testing may be waived for inner tank material of cargo tanks with a design temperature warmer than -420°F.

(2) § 178.338-10 does not apply.

(3) The portable tank need not conform to § 178.338-13(a) and (b). Lifting lugs, framework and any anchoring to the inner tank, the nitrogen tank or the tank jacket must conform with § 178.338-13(a). A portable tank that meets the definition of "container" in 49 CFR 450(a)(2) must meet the requirements of 49 CFR Parts 450 through 453, and each design must be qualified in accordance with § 178.270-13(c).

(4) "DOT-E 6765" must replace the mark "MC 338".

8. SPECIAL PROVISIONS:

a. Each portable tank must be reinspected and retested once every five years in accordance with § 173.32(e) as prescribed for DOT Specification 51 portable tanks. The test pressure in the inner tank shall be determined from the following formulas:

If there is no vacuum in the outer jacket during test:

$$P_T = 1.25 \times [P_d + H_s + 14.7]$$

If vacuum exists in the outer jacket during test:

$$P_T = 1.25 \times [P_d + H_s + 14.7] - 14.7$$

Where:

P_T = Test pressure, psig
P_d = Design pressure (maximum allowable working pressure), psig
H_s = Static head of liquid in inner tank, psi

b. Each portable tank must be plainly marked on both sides near the middle, in letters at least two (2) inches high on a contrasting background, "DOT-E 6765". Each portable tank used in hydrogen service must be marked "One-way travel time _____ Hours" or "OWTT _____ Hours" in letters at least two (2) inches high near the "DOT-E 6765" marking. The proper OWTT must be determined using the formulas in subparagraphs d. or e. of this paragraph.

c. Each portable tank must be prepared and shipped as required in § 173.318, as applicable for the lading.

d. Shipments by motor vehicles must conform with the following:

(1) The OWTT must be determined for each portable tank used in hydrogen service by the formula:

OWTT = 0.5 (MRHT - 24); for MRHT less than 72 hours, or

OWTT = MRHT - 48; for MRHT of 72 or more hours.

(2) The provisions of § 177.840 apply to each portable tank used in hydrogen service.

e. Shipments by cargo vessel must conform with the following requirements:

(1) Portable tanks may be overstowed only if enclosed in an ISO-type frame and otherwise suitably protected. In all situations, the portable tanks must be stowed such that they are readily accessible and can be monitored in accordance with the provisions of this exemption.

(2) The legend "One-Way Travel Time _____ Hours" or "OWTT _____ Hours" must be marked on the shipping paper immediately after the container description. The OWTT is determined by the formula:

OWTT = MRHT - 24 hours.

(3) A written record of the portable tank's pressure and ambient (outside) temperature at the following times must be prepared for each shipment.

(i) At the start of each trip;

(ii) Immediately before and after any manual venting;

(iii) At least every 24 hours; and

(iv) At the destination point.

(4) Any lading road relief valve set at a pressure lower than that prescribed for the (safety) pressure relief valve must be closed during transportation by cargo vessel unless the rated holding time was determined based on the setting of the road relief valve.

f. No person may transport a charged portable tank unless the pressure of the lading is equal to or less than that used to determine the marked rated holding time and the OWTT is equal to or greater than the expected elapsed time between the start and termination of travel.

g. The actual holding time for each tank must be determined after each shipment. If it is determined that the actual holding time is less than 90 percent of the MRHT of the tank, the tank may not be refilled until it is restored to its MRHT or the tank is remarked with the reduced holding time determined by this examination.

h. A person who is not a holder of this exemption who receives a package covered by this exemption may reoffer it for transportation provided no modifications or changes are made to the package and it is reoffered for transportation in conformance with this exemption and the HMR.

i. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

9. MODES OF TRANSPORTATION AUTHORIZED:

Motor vehicle and cargo vessel except shipment of hydrogen are limited to transportation by motor vehicle.

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel and motor vehicle used to transport packages covered by this exemption.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.

- o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must inform the AAHMS, in writing, of any incident involving the package and shipments made under the terms of this exemption.

Issued at Washington, D.C.:

J. Suzanne Hedgpeth

SEP 21 2000

Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

(DATE)

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590. Attention: DHM-31

The original of this exemption is on file at the above office. Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

Copies of exemptions may be obtained from the AAHMS, U.S. Department of Transportation, 400 7th Street, S.W. Washington, DC 20590-0001, Attention: Records Center, 202-366-5046.

Dist: FHWA, USCG
PO: PTOlson/SC

The following are hereby granted party status to this exemption based on their application(s) submitted in accordance with § 107.107 or § 107.109, as appropriate:

Company Name City/State	Application Date	Issue Date	Expiration Date
Aeriform Corporation Houston, TX	5/10/2000 & 2/01/2001	2/1/2001	2/28/2002
Air Products Helium, Inc. Allentown, PA	5/3/2000	5/18/2000	2/28/2002
BOC Gases Murray Hill, NJ	5/25/2000	6/9/2000	2/28/2002
Hoyer-Odfjell (also known as Hoyer USA) Pasadena, TX	7/10/2001	JUL 23 2001	2/28/2002
Iwatani International Corp. of America Fort Lee, NJ	6/8/2000	6/30/2000	2/28/2002
L'Air Liquide Corporation Le Blanc-Mesnil, France (U.S. Agent: Air Liquide America Corp.) Houston, TX	6/28/2000	7/24/2000	2/28/2002
Linde Gas AG, Hollriegelskreuth, Germany (U.S. Agent: AGA Gas, Inc., Independence, Ohio)	12/28/2000	1/23/2001	2/28/2002
Messer Griesheim (MG) Industries, Inc. Malvern, PA	3/13/2000	3/30/2000	2/28/2002
Nippon Helium, Inc. Yokohama, Japan (U.S. Agent: Mitsui & Co. (U.S.A.) Inc. New York, NY)	7/18/00	8/4/2000	2/28/2002

Company Name City/State	Application Date	Issue Date	Expiration Date
Praxair, Inc. Danbury, CT	6/28/2000	7/24/2000	2/28/2002
Teisan Kabushiki Kaisha Tokyo, Japan (U.S. Agent: Air Liquide America Corp.) Houston, TX	6/28/2000	7/24/2000	2/28/2002
Union Helium Co., Ltd. Minato-ku, Tokyo, Japan (U.S. Agent: Bingham Dana LLP, Washington, DC)	8/17/2000 & 10/23/00	8/28/2000	2/28/2002

FOR Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety